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ABSTRACT

PREP (Preparation through Responsive Educational Programs) is a teacher training model that is part of an educational research project presently in its fifth consecutive year of operation in Washington, D.C. area junior high schools. Its primary objective is the development and evaluation of procedures and curricula to assist academically or socially deficient junior high school students to improve their in-school achievement and to increase constructive out-of-school behavior. It is a multi-faceted program involving intensive academic skill training using individualized instructional procedures, social skill training with specially developed curricula, training and liaison work with parents, special reinforcement procedures,and training of teachers. The paper describes the changes that have been made in PREP's approach to teacher training and presents the conceptual model that presently guides PREP teacher training efforts. The present model is a more empirically based, idiosyncratic model in which teacher behaviors are evaluated primarily in relation to the achievement of particular short-term student outcomes. (JMF)

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# TEACHER TRAINING IN PREP: TOWARD A MORE IDIOSYNCRATIC MODEL

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This paper reports on the development of a teacher training model that is part of an educational research project presently in its fifth consecutive year of operation in Washington, D.C., area junior high schools. The program, Preparation through Responsive Educational Programs (PREP), has as its primary objective the development and evaluation of procedures and curricula to assist academically or socially deficient junior high school students to improve their in-school achievement and to increase their constructive out-of-school behavior.

To achieve these goals, PREP has developed a multi-faceted program involving intensive academic skill training using individualized instructional procedures, social skill training with specially developed curricula, training and liaison work with parents, special reinforcement procedures, and training of teachers. (See Cohen, Filipczak, Boren, Goding, Storm, Bishop & Breiling, 1974; and Filipczak & Friedman, 1976, for a more detailed description of the PREP program). To date, the project has worked with approximately 450 students and 33 teachers in a suburban junior high school, a rural middle school, and an urban junior high school. PREP students have consistently shown greater academic gains than control students across the years of the program and across the different school settings (Friedman, Filipczak, Picek & Fiordaliso, 1975). These gains have been achieved while PREP students were enrolled in class sizes ranging from a minimum of 15 during the first project year in the public schools to 25 during the present year, with the classes being conducted by regular public school teachers.

The present paper will describe the changes that have been made progressively in PREP's approach to teacher training. It concludes by presenting the conceptual model that presently guides PREP teacher training efforts. This model, as well as most features of the PREP program, is heavily based on principles of operant psychology. It draws additionally upon the extensive research

that has recently been reported in the area of teacher effectiveness (Glass, 1974; Mahan & Hull, 1975; McNeil & Popham, 1973; Rosenshine, 1971; Rosenshine & Furst, 1973). It is significant to note, however, that while the teacher effectiveness research has primarily been directed at identifying teacher behaviors that are effective in promoting student achievement in a variety of different types of settings with different types and ages of students, PREP's interest has been restricted to the academically and socially deficient junior high school student.

Teachers have been selected for participation in PREP by a variety of means, ranging from volunteering to selection by the principal. Four of the 33 teachers were in their first year, and 18 had completed more than two years of teaching before beginning in the program (overall range of experience is 0 to 41 years). Therefore, for the most part, the teacher training efforts of PREP were directed at a moderately experienced group of teachers.

## Teacher Training Approach

The goals of PREP teacher training efforts have been broad and varied. They have included many out-of-classroom behaviors, such as preparation of materials, selection of curriculum, development of student work contracts, preparation of worksheets and assignments, scheduling of frequent tests and quizzes, and utilization of available data to determine skill levels of students. Most of the effort of PREP, however, has been directed towards the in-class behavior of the teachers, and the present paper will be restricted to a discussion of this aspect of the training program.

The process of PREP teacher training for in-class behavior was initially composed of three related steps. The first involved the specification of objectives for teacher behavior in the classroom. The second involved the application of particular training procedures to assist the teachers in meeting

the objectives specified in the first part. The third step was the monitoring and evaluation of teacher performance in the classroom to determine the degree to which the teacher had successfully accomplished the specified objectives. To the extent that particular teachers were found to be performing below minimal expectations during step three, the cycle then reverted back either to step one, where the objectives were modified, or to step two, where additional training was provided.

The initial objectives that were selected primarily reflected the operant theoretical orientation of the project and the empirical results of research studies in which behavioral procedures had been applied in educational settings conducted both by PREP staff (Cohen & Filipczak, 1971; Cohen et al., 1971) and others (Hall, Panyan, Rabon & Broden, 1968; Madsen, Becker & Thomas, 1968, for example). Thus, skills such as the use of praise to consequate on-task behavior, the control of undesirable behavior through ignoring and brief time-out periods, frequent and specific feedback from teacher to student, and the clear specification of student performance requirements were emphasized. Specific objectives were established for teachers with regard to these skills. The selection of criterion levels for these behaviors was of necessity somewhat arbitrary; the state of the technology at the initiation of the program did not permit anything more than an educated guess as to precisely what a teacher's rate of praise should be. The same teaching skills and criterion levels were emphasized for use in both the academic classes of PREP (which are primarily conducted in an individualized instructional manner) and in the interpersonal or social skills classes (in which group instructional procedures are most often used).

The training procedures used to assist the teachers in reaching these performance objectives have been numerous and varied. Each new teacher in the program was first provided with intensive but short-term didactic instruction in behavior modification procedures. At the suburban school site, where the

program operated during the 1971-72 and 1972-73 school years, a three-day workshop was conducted before the start of each year's program. At these workshops, teachers were trained to a mastery level on use of behavioral language and principles. Workshops of five days were used both at the rural and urban school sites before teachers participated in the program. In addition to the didactic instruction, more active training procedures were employed during these pre-service training sessions, such as modeling, role-playing, and micro-teaching.

During the school year, PREP staff have directly modeled the behavioral skills in the classroom for the teachers, observed the teachers as they performed the skills and provided them with both quantitative and qualitative feedback, and met with them on a regular basis (from daily to weekly) to provide consultation with problems and develop special programs where needed.

To supplement the training, PREP has employed a number of positive reinforcers to increase teacher performance in the specified skills. These have included the opportunity to earn graduate credit, staff praise and consultation, occasional lunches or snacks (contingent on attendance at training sessions, letters to supervisors, and additional assistance with classroom tasks.

A variety of procedures have also been used to monitor and evaluate the performance of the teachers in the classroom. Formal procedures have included the use of teacher performance checklists, frequency counts of teacher and student behavior, and sequential analyses of student-teacher interactions. In addition, videotapes have been made of classes, and PREP staff have informally observed the teachers' behavior.

## General Results of Teacher Training Procedures

On the basis of four years of experience in teacher training with these types of objectives, and training and monitoring procedures, it is possible to

report findings that have been consistent across settings. First, teachers have demonstrated a high level of proficiency in understanding behavioral principles and in applying them during role-playing situations. A pre-test given to five new teachers in the program during the present school year suggests that these teachers had mastered the behavioral concepts even before the training had begun, a situation that is likely to be found more frequently as teacher education programs include behavioral principles in their curriculum.

Second, in the day-to-day application of the skills emphasized during training, considerable inconsistency has been found between teachers, as well as for individual teachers across days (though less so in this case). While some teachers have demonstrated sizeable changes in their classroom behavior as a result of the training, particularly with regard to the use of praise and other social reinforcers for on-task behavior (Pumroy & Karapetian, 1975), other teachers who have demonstrated the same degree of proficiency in the training sessions have shown virtually no change in their classroom behavior.

Third, the relationship between teacher behavior in the classroom and academic progress of students has not been as clear-cut and direct as was anticipated. Individual teachers have produced extremely high student work rates while failing to perform the skills thought to be important by PREP. To some extent this may be interpreted as indicating that other features of the PREP model, such as special reinforcement conditions and individualized instructional procedures, are sufficiently powerful to overcome the effects of deficits in teacher performance. However, other teachers who have used the same reinforcement and instructional systems, and who have done better in performing the skills emphasized by PREP, have in some instances been less successful in producing consistently large student academic gains. For example, several teachers who have reliably failed to achieve the PREP-specified objective of making four positive comments to every one negative comment have nonetheless produced high

rates of on-task behavior and student work. This has been found in at least two different subject areas and at both the rural and urban settings.

Fourth, some of the teachers, despite the reinforcers employed by PREP, have resisted efforts to change their behavior. This has occurred more frequently with experienced and tenured teachers, some of whom have experienced varying amounts of success in their classes using non-PREP procedures. Meanwhile, PREP staff have found it discouraging to persistently encounter failure in trying to achieve these changes.

In summary, the results of these teacher training procedures have been mixed. A number of teachers have made sizeable changes in classroom behaviors, and, most importantly, students have consistently made more academic progress than control students. It is difficult to determine, however, the extent to which the overall success of the project is due to the teacher training efforts, since the program includes a number of other important features as well. The most serious questions about the adequacy of this approach to teacher training were raised by the lack of clear relationships in the anticipated directions between particular behaviors of teachers and the students in their classes, the observed success of several teachers while not fulfilling the PREP-specified objectives, and the resistance of a small group of teachers to the training efforts. As a result of these findings, PREP has moved towards a less theory-based and more idiosyncratic model of teacher training.

## Features of the Revised Model

This revised model seeks to develop an empirically-based theory of teacher effectiveness for individual teachers rather than for groups of teachers. A basic assumption is that the same constellation of behaviors performed by different teachers will not have the same effect, particularly when the students, the subject and curriculum, the setting, and many other factors, including the

teacher's effectiveness as a reinforcer, differ. An additional assumption is that the establishment of criterion levels of performance for particular behaviors, while useful and perhaps even necessary to improve the performance of large groups of teachers, may not be an effective way of optimizing the teaching performance of individual teachers. In order to determine the set of behaviors that are most effective for individual teachers, and the rate at which they should be performed, it is necessary to conduct empirical analyses within that teacher's classroom on numerous occasions. It is necessary to do this, first, to describe the teacher's existing behavioral style; second, to determine the correlational relationship between day-to-day differences in teacher behavior and day-to-day differences in student behavior; and, third, to determine the direction of these relationships by jointly working with the teacher to systematically change his/her behavior. This more empirically-based and idiosyncratic model of teacher training upon which PREP has recently embarked follows, for individual teachers, the three steps outlined by Rosenshine and Furst (1973) for teacher effectiveness research with groups of teachers: description, correlation, and experimentation.

The first step in the revised model, rather than involving a specification of teacher behavior objectives with the expectation that the attainment of these will result in the desired student gains, involves a specification of student achievement objectives. While PREP has exercised the leadership role in this process, teachers are actively involved as well. The explicit approval of the objectives by the teachers is essential. Once this is achieved, the primary concern of PREP is not with the particular means by which teachers go about achieving the objectives, but strictly with the results of the efforts.

While there are numerous possible objectives for students, PREP has chosen to focus on student academic skill gains, which is operationally defined as student work-rate (number of assignments completed per unit of time). The

definition of an assignment unit for each class is agreed upon between teachers and curriculum and research staff of PREP. The decision to focus on academic skill gains as the major student objective is based on several factors. First, the students served by the PREP project are highly deficient in basic academic skills. Second, it is of the utmost importance that student performance be measurable directly and daily. If this is not possible, then the correlational, and ultimately experimental, analyses of the relationship between teacher and student behavior cannot be performed. To the extent that multiple objectives, or objectives that are difficult to measure, are used, then it becomes less possible to conduct the necessary analyses for the development of a theory of effectiveness for a particular teacher.

The next step of this model is the selection and/or development of observational instruments for use in gathering data on teacher performance. It is at this point that PREP has encountered some serious problems. The number of teacher behaviors that can be monitored by an individual observer is limited. Yet the range of behaviors performed by teachers, any one of which may be of major importance for a particular teacher, is extremely broad. If one selects or develops an observational system that seeks breadth in order to encompass as many potentially important teacher behaviors as possible, then the resulting measures may not be specific enough to detect important changes in the teacher's behavior from day to day. It appears at this time that it may be necessary to use a series of observational procedures and instruments. For the initial observations, an instrument that samples the teacher's behavior on a relatively broad range of behaviors would be desirable. This would permit a general determination of two or three areas of behavior that seem to be of particular importance for a teacher, by virtue of the rate of their occurrence, the variability from day to day, or their antecedent or consequent stimulus conditions. Once those specific areas have been identified, it would then be

possible to use more specific measures that would be sensitive to changes from day to day. For example, it has been noted in PREP that a broad class of teacher behaviors that might be labeled "assertiveness" is related to student work-rate. An initial observational system, designed essentially for general assessment, might include observer ratings on the dimension of assertiveness. If ratings for a particular teacher on this dimension are extremely low or variable, a specific, low-inference observational procedure that includes a number of different behavioral referents for the general characteristic of assertiveness could be used. Such an observational system is presently being developed by PREP to focus specifically on assertive behaviors, since this appears to be a critical area for several teachers.

The selection of dimensions for the observational procedure, whether these dimensions be low-inference or high-inference, must inevitably be based either on theory or empirical data, since the universe of categories is far greater than could be included in one system. PREP has remained committed primarily to a behavioral model in this regard, despite retreating from an earlier position of stating specific criterion levels for particular teacher behaviors. From a behavioral perspective, a complete analysis of behavior requires going beyond frequency counts to also identifying antecedent and consequent stimuli that appear to be controlling, or controlled by, the behavior. The importance of this raises a second problem in trying to select and/or develop observational procedures for the classroom. While the value of sequential analyses of behavior has been demonstrated in natural settings, it has primarily been applied in small group settings such as the family (for example, Patterson, 1973, 1974). Although such an analysis would appear equally important in a class of 25 students as in a family of four members, the technical problems in conducting it are far greater. How does one characterize the actions of 25 different individuals as a particular antecedent or consequent stimulus, particularly with

the need to do such a characterization in a sufficiently short time period so that the stimulus has not changed before the measure of teacher behavior has been taken?

To date, PREP is proceeding along two lines to try to develop an observational procedure that takes into account the sequential patterns within a classroom. The first line, certainly not unique to PREP, involves focusing directly on the teacher as he/she interacts with a particular student or group of students. The behavior of that student (or group) immediately before the teacher's behavior (or immediately after for the analysis of consequences of teacher behavior) is then categorized in a two-dimensional model along with the teacher's behavior. With this system, a particular student may be observed a substantial number of times during a period if the teacher has interacted with that student more than with others. This approach appears most manageable in a class conducted by individualized instructional procedures, or in a small class, but less appropriate with large classes being taught by a group lesson. PREP's second approach to sequential analysis has involved observing each student in a pre-determined but random order for five seconds, and then the teacher. While this approach would seem to be more appropriate for group instruction, it runs the risk of taking the very complex stimulus represented by 25 students and oversimplifying it by concentrating on just one student at a time. The ultimate utility of these two approaches to sequential analysis will be determined by reviewing the empirical data collected through their use. Only in that way will it be possible to determine if these procedures serve to highlight important relationships between teacher and student behavior, or only introduce additional error variance into the whole process.

At present, PREP, like most others who are out in the schools on a daily basis, cannot take the luxury of awaiting the development of measurement procedures sufficiently sensitive and encompassing to account for a large

proportion of the variance in student behavior within a single teacher's class from day to day. Instead, PREP has proceeded with the instruments and data at hand to apply additional steps in this more empirically-based teacher training model.

## Preliminary Results

During this school year, data have been collected on a regular basis for eight classes in the rural site and nine classes in the urban site. These data have included student work rates, on-task behavior, and teacher performance on a PREP-developed checklist (see Appendix). These two sets of data have been correlated for seven teachers--four at the rural school and three at the urban site.

The items on this checklist were categorized as "reinforcement-related" (including prompts, praise, and other feedback) or as "management-related" (including preparation and use of materials and organization of the class). In the rural setting, meeting the requirements for either "reinforcement" or "management" constellations was not significantly related to class work for one teacher. For only one of four teachers was the total compliance (both reinforcement and management) on the checklist related highly with student on-task behavior. Further, item analysis for the total checklist revealed only one item that discriminated significantly between high on-task and low on-task days, and this was found significant for only one teacher. At the urban site, low non-significant correlations were obtained between work rate and compliance on the checklist with two teachers. For one of the urban teachers, a significant positive relationship was found between total checklist performance and student on-task ($p<.05$). These early analyses on urban school data have not shown significant positive relationships between total checklist performance and student work rate. It would appear from these results, and a more total analysis will

be available at the conclusion of this school year, that the checklist is not an adequate measure for discriminating between high and low student work performances, although it may be of value with regard to the measure of on-task behavior.

In addition to these preliminary findings, there have been several informal but important findings concerning this newer approach to teacher training. During the school year, data on student performance are regularly discussed by staff and teachers. In sharing these data, PREP assumes a totally empirical approach. Rather than requesting that teachers perform particular behaviors in order to elevate the level of student performance in their classes, staff have emphasized the achievement of the student work objectives by whatever means have seemed most appropriate to the teacher. In several instances, teachers have demonstrated that with the benefit of this specific and frequent feedback on student performance, they are able to modify their behavior in an effective way without any specific consultation. In other instances, however, the more frequent feedback on student performance has resulted in teacher's requesting specific assistance in improving work output, either through changes in teaching behavior or curriculum materials and procedures. Most of the teachers have been responsive to this feedback procedure and new approach, although student performance objectives have remained below the criterion level in about one-third of the classes.

It should be noted that there are several important though rarely used restrictions on this model of "whatever works for you, use it." First, the teacher must practice ethically-acceptable procedures. This has not been a problem for PREP to date. Second, possible side effects or long-term effects of the teaching procedures must be considered. It is particularly difficult to take into account the potential long-term effects of the procedures, however, because of an absence of relevant studies on this question.

Further, it must be emphasized again that the focus of this paper has been on the behavior of the teacher in the classroom. This revised PREP model strives to account for variability in day-to-day behavior of students as a function of teacher behavior, assuming that other important variables are controlled. For purposes of maximizing the likelihood of achieving the agreed-upon student objectives, however, it is essential to continually evaluate the effectiveness of these other variables, such as the type of instructional and reinforcement procedure used and the curriculum material itself.

At this point, in the fifth year of the PREP program in public schools, this more empirical and less theoretical approach to teacher classroom practices is resulting in some surprising findings. For example, after recommending to teachers the use of ignoring as an effective means for dealing with minor off-task behavior, PREP noted that in individualized classes some of the most consistent and largest-scale successes have been achieved by teachers who have not followed this practice, but rather have briefly but decisively redirected students to their work. It may in fact be that with junior high school students, many of whom have been referred to the program for social behavior problems, the effects of ignoring are quite different than with younger children on whom much of the behavioral educational research has been conducted. The PREP students have a long history of poor school performance, are very much under the control of peer reinforcement, and are grouped with peers who may eventually reinforce even minor off-task behavior. Further, with these students, it has been found that teachers who do not meet the PREP objective of four positive comments for every negative comment are in some cases quite successful. These findings are based on a small group of teachers, and are obviously in need of replication. They point out, however, the need to consider the possible interaction effects of setting and student variables with teacher behaviors, and the importance of more precise research in these areas.

In summary, this paper has described the past and present efforts of PREP in the area of teacher training. It has recounted the change from a model based on the performance by teachers of specified skills believed to be important by PREP, to a more empirically-based, idiosyncratic model in which teacher behaviors are evaluated primarily in relation to the achievement of particular short-term student outcomes. The particular difficulties in developing classroom observation systems of adequate sensitivity were discussed, particularly in relation to the problem of analyzing sequences of teacher-class interaction. It was reported that in spite of this difficulty the shift to this model with its greater attentiveness to individual differences between teachers has been successfully implemented with a limited number of teachers.

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# APPENDIX

## TOPS

### Teacher Observable Practices Sheet

| BEFORE THE START OF CLASS: | YES | NO | N.A. | COMMENTS |
|---|---|---|---|---|
| Had best prior classwork posted | | | | |
| Had contract or lesson plan available | | | | |
| Had needed supplies and materials available | | | | |
| Had needed A/V equipment ready for use | | | | |
| Had Aide Task Sheets or other instructions available | | | | |

| DURING THE FIRST 3 MINUTES OF CLASS: | | | | |
|---|---|---|---|---|
| Had class in seat and quiet at bell. | | | | |
| Took class attendance (with aides) | | | | |
| Fed back Assignment Completed data | | | | |
| Fed back positive behavior information for last class | | | | |
| Told students type/time for reinforcement | | | | |
| Told criteria for reinforcement | | | | |
| Gave daily assignment clearly | | | | |
| Signaled start of work period | | | | |

| FOR GROUP LESSON: | | | | |
|---|---|---|---|---|
| Had assignment posted on blackboard | | | | |
| Had lesson plan and objectives available on desk | | | | |
| Had aides or others distribute materials for use | | | | |
| Used chalkboard or A/V equipment to present lesson | | | | |
| Prompted student participation in discussions | | | | |
| Helped students who requested it | | | | |
| Praised students and class for on-task (4:1) | | | | |
| Provided feedback on correct responses | | | | |
| Supervised aides in all needed duties | | | | |
| Collected in-class work for later grading | | | | |
| Had enough work for all students | | | | |
| Used Behavior Sheet in classroom | | | | |

| FOR INDIVIDUAL LESSON: | | | | |
|---|---|---|---|---|
| Had assignment posted on board | | | | |
| Had contracts and folders available for each student | | | | |
| Had aides distribute individual lessons | | | | |
| Circulated to all students during class | | | | |
| Provided help to any student requesting it | | | | |
| Praised students and class for on-task (4:1) | | | | |
| Ignored minor off-task performance | | | | |
| Supervised aides on all needed duties | | | | |
| Had enough tasks for all students | | | | |
| Used Behavior Sheet in classroom | | | | |

| DURING LAST 2 MINUTES OF CLASS: | | | | |
|---|---|---|---|---|
| Praised individuals or group for on-task | | | | |
| Announced clean-up time | | | | |
| Worked all period on this class teaching | | | | |
| Distributed and explained homework assignments | | | | |
| Passed back graded work from prior classes | | | | |
| Dismissed class with positive comments | | | | |

TOTAL: [ ] [ ] [ ]

% COMPLIANCE: [ ] (Yes ÷ Yes + No = Compliance)